Honeywell

HD16
CCTV Camera

User Guide

Document 900.0345 – Rev 1.02 – 03/07

Revisions

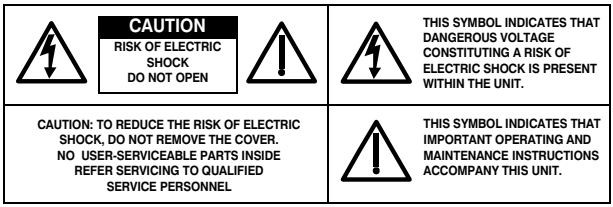
Issue	Date	Revisions
1.00	03/06	New document based on 900.0184 rev 4.00.
1.01	05/06	Amended *Figure 11* to show 4 DIP switches.
1.02	03/07	Removed monochrome models, updated specs.

Warnings

Installation and servicing should be performed only by qualified and experienced technicians to conform to all local codes and to maintain your warranty.

WARNING! **The use of CSA Certified/UL Listed Class 2 power adapters is required to ensure compliance with electrical safety standards.**

Explanation of Graphical Symbols


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
THIS SYMBOL INDICATES THAT DANGEROUS VOLTAGE CONSTITUTING A RISK OF ELECTRIC SHOCK IS PRESENT WITHIN THE UNIT.
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER.
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL
THIS SYMBOL INDICATES THAT IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS ACCOMPANY THIS UNIT.

FCC Compliance Statement

Information to the User: This equipment has been tested and found to comply with the limits for a Class A digital device. Pursuant to Part 15 of the FCC Rules, these limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la Classe A est conforme à norme NMB-003 du Canada.

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Overview

The HD16 CCTV Camera can be flush or surface mounted to a wall or ceiling. The HD16 features a high-impact plastic enclosure and polycarbonate dome that has an adjustable dome insert to conceal camera components without compromising light sensitivity or picture quality. The HD16 accommodates a 5-50 mm varifocal auto-iris lens.

Before You Begin

Please read this guide carefully before you install this HD16 CCTV Camera.

Keep this guide for future reference.

Unpack Everything

Check that the items received match those listed on the order form and packing slip. The HD16 packing box should include, in addition to this User Guide:

- One fully assembled HD16 Camera
- One HD16 hardware kit
- One Product Warranty card

If any parts are missing or damaged, please contact the dealer you purchased the camera from, or call Honeywell Customer Service. See “Service” on page 19.

Equipment Required

You will require the following tools to complete the installation:

- Phillips screwdriver.
- Side-cutters.
- Mounting screws. Use mounting screws appropriate to your installation.

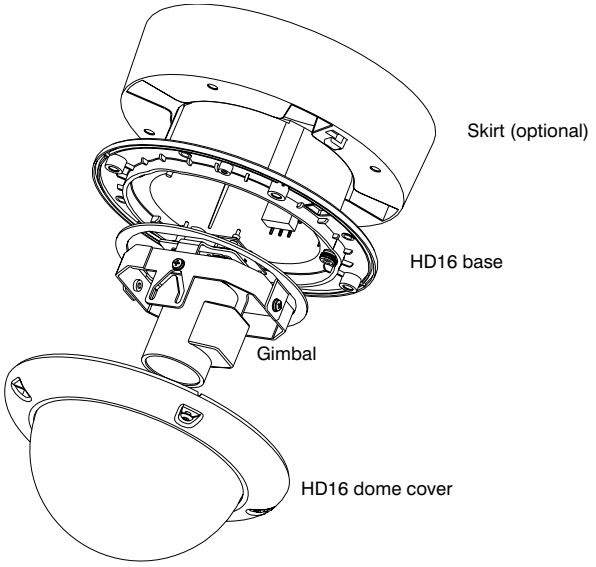
Installation

The HD16 Camera is designed to be flush or surface mounted on a wall or ceiling. It is weather sealed for indoor or outdoor locations.

Overview of Assembly Procedure

Task	See section
1. Mount the HD16 to a ceiling or wall.	See “Mount the HD16” on page 8.
2. Connect the cable to the camera board.	See “Connect the Power Cable” on page 9.
3. Secure the gimbal into the HD16 base.	See “Install the Camera Assembly” on page 10.
4. Adjust the camera settings.	See “Adjust the Camera” on page 10.
5. Secure the cover.	See “Secure the Camera and Dome Enclosure” on page 16.

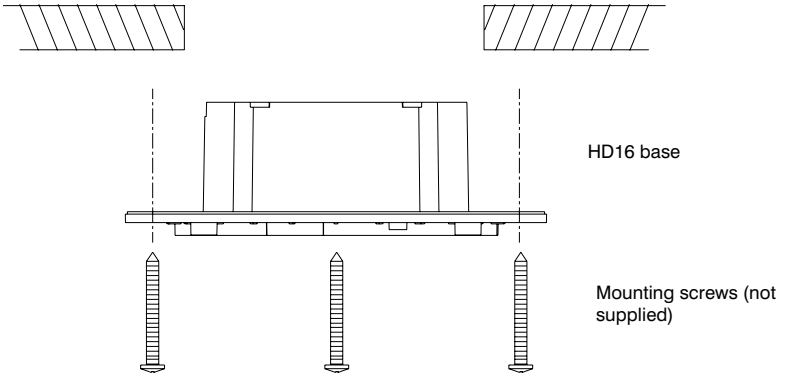
Figure 1 Installation Components



Mount the HD16

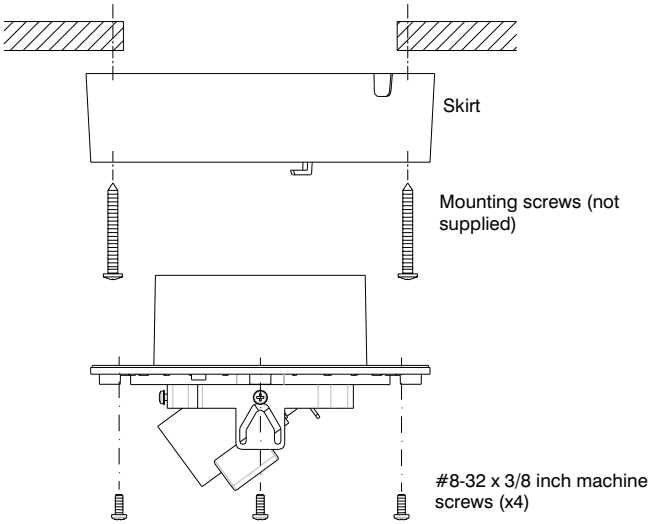
Follow *Figure 2* to mount the HD16 flush to a ceiling or wall.

Figure 2 Flush Mount Installation



Follow *Figure 3* to surface mount the HD16 to a wall or ceiling.

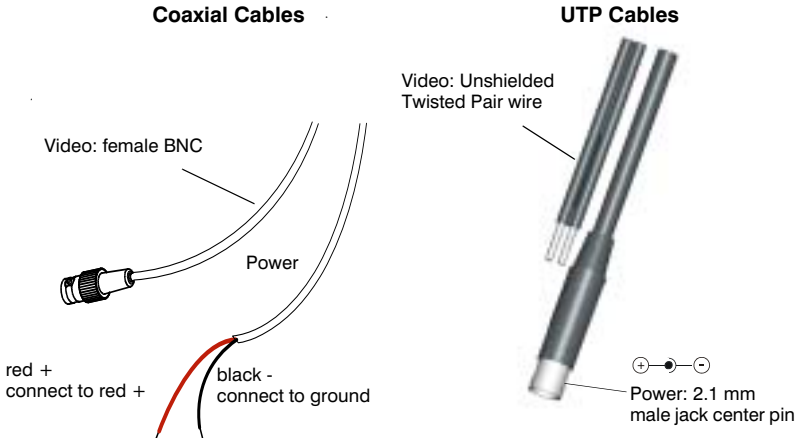
Figure 3 Surface Mount Installation



Connect the Power Cable

1. Follow *Figure 4* for the wiring connection.

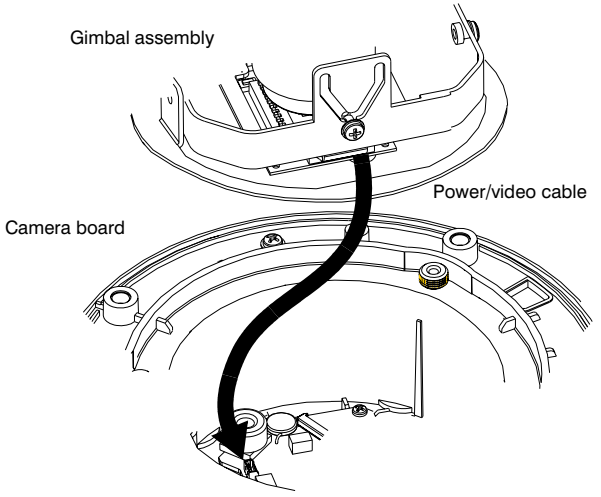
Figure 4 Wiring



2. Connect the power/video cable from the gimbal assembly to the camera board (see *Figure 5*).

Note For secure installations, surface-mounted cables should be protected by plastic or metal cable covers.

Figure 5 Power Cable Connection



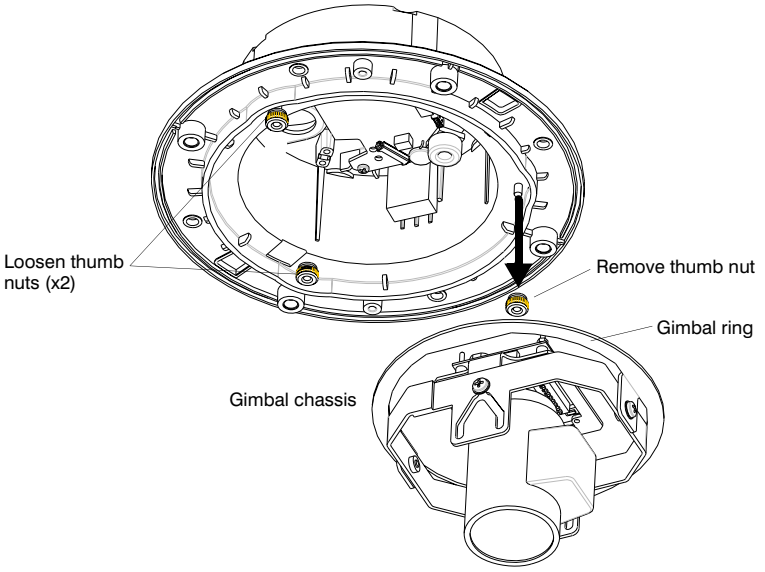
Install the Camera Assembly

To install the camera assembly into the HD16 base:

1. Remove one of the three thumb nuts from the camera chassis (see *Figure 6*). Loosen the other two thumb nuts.
2. Slide the gimbal ring under the two loosened thumb nuts.
3. Adjust the camera position. See “Adjust the Camera” on page 10.
4. Replace the thumb nut you previously removed in *step 1*.
5. Tighten all three thumb nuts to secure the camera assembly.

   Make sure that the camera DIP switches are on the top of the lens mount when the HD16 is mounted on the wall or ceiling.

Figure 6 Camera Assembly



Adjust the Camera

To adjust the HD16 Camera:

1. Apply 11-16 VDC or 24 VAC power to the camera and monitor the video signal.
2. Loosen as many screws and thumb nuts that lock the gimbal assembly in place as necessary to adjust the camera position (see *Figure 6*).
3. Adjust the camera carrier to the desired view by moving the gimbal in the V groove (see *Figure 7*).

Figure 7 Recommended Camera Positions

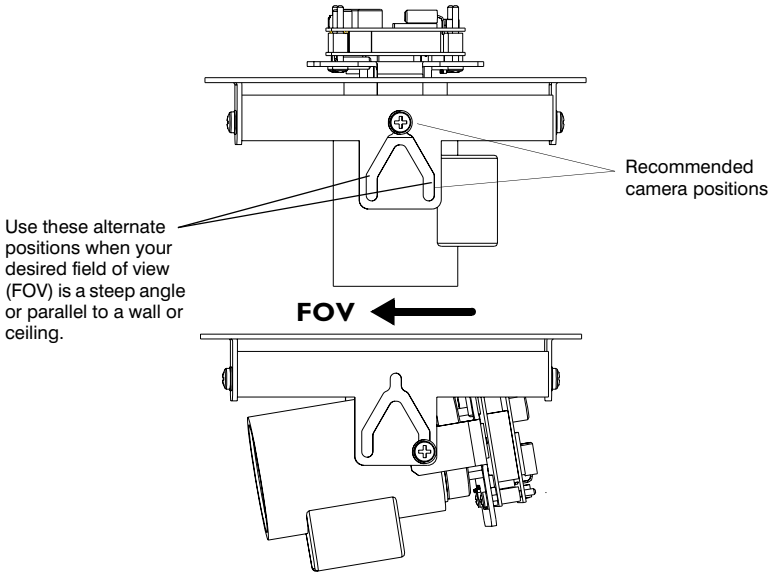
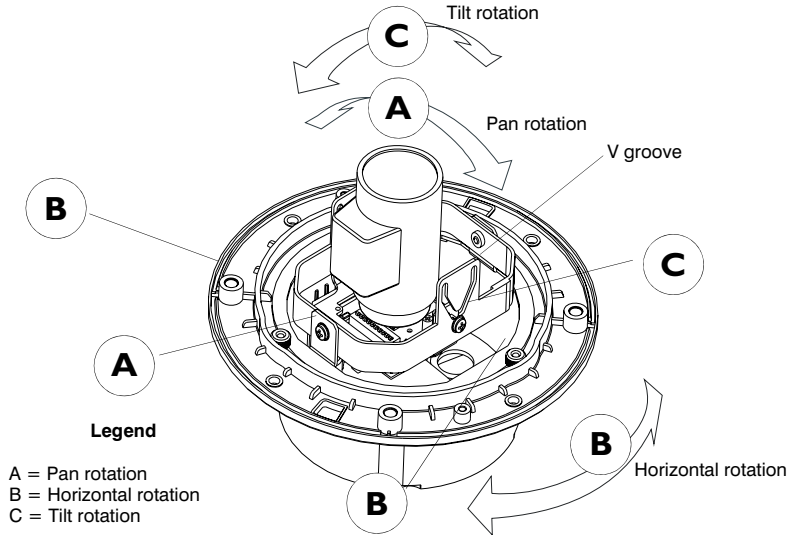


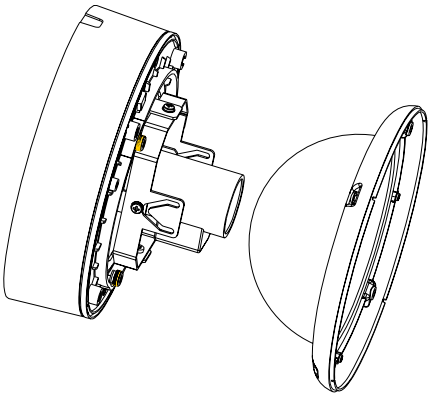
Figure 8 shows how to use the thumb nuts and screws to adjust the gimbal.

Figure 8 Gimbal Adjustment



4. Tighten the screws and thumb nuts to lock the gimbal assembly in place.
5. Focus the lens:
   a. Place the dome as shown in *Figure 9*.
   b. Adjust the focal length using the top locking screw. See *Figure 10* for color cameras or *Figure 11* for monochrome cameras.
   c. Adjust the focus using the bottom locking screw (closest to the camera board). See *Figure 10* for color cameras or *Figure 11* for monochrome cameras.
6. To adjust the camera direction, view angle and focus, connect the service monitor cable (supplied) to the video monitor output (see *Figure 10* for color cameras and *Figure 11* for monochrome cameras).
7. Rotate the dome and place it over the base so that the security screws are lined up with the screw holes on the base.
8. Check the picture. If the focus is clear, go to *step 9*. If the focus is not clear, repeat *step 5* and *step 6* until you are satisfied with the picture clarity.

Figure 9 Lens Focus and Field of View Adjustment



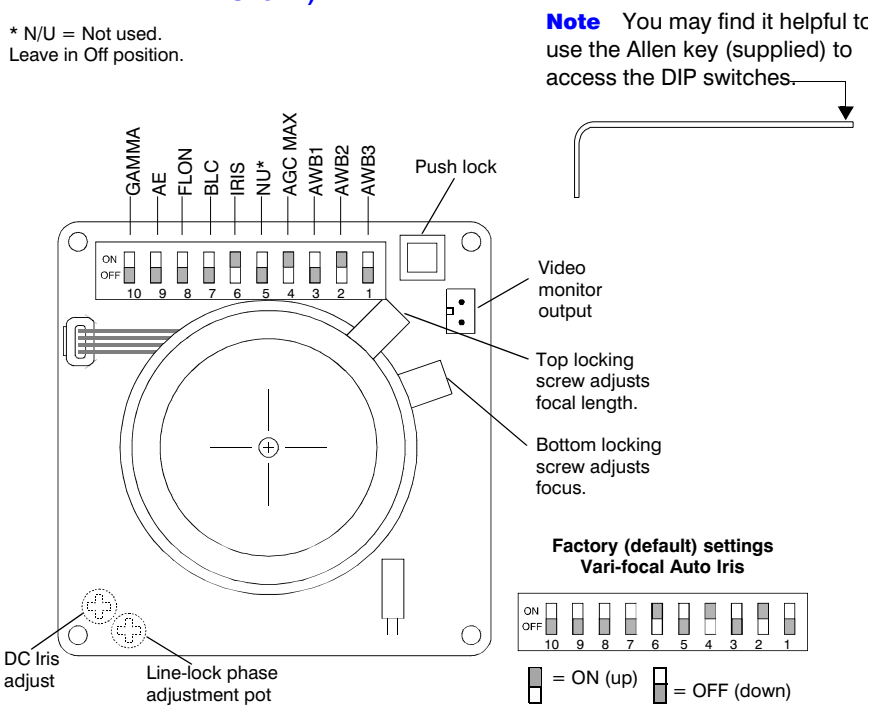
Vari-focal Auto Iris Configuration (Color Cameras)

To adjust the focal length and focus of the lens, see *Figure 10*. Color cameras have a potentiometer on top of the board to regulate the Auto Iris lens.

9. Set the DIP switches. See the following sections for the DIP switch functions and adjustment methods.

DIP Switch Functions (Color and TDN Cameras)

Figure 10 Color Camera Switch Settings (Vari-focal Auto Iris Lens Shown)



Adjustment Method (Color and TDN Cameras)

Switch no.	Function	Off	On
10	GAMMA	Off (0.45)	On (1.0)
9	AE (Automatic Exposure)	Off	On (see *Manually Setting Shutter Speed (Color and TDN Cameras)*)
8	FLON (Flicker Less)	Off	On
7	BLC (Backlight Compensation)	Off	On (Center window)
6	IRIS Control	Electronic IRIS	Auto IRIS
5	Not used	Not used	Not used
4	AGC	4 dB	26 dB

White Balance Adjustment Method (Color and TDN Cameras)

Symbol	SW3/AWB1	SW2AWB2	SW1AWB3
AWB	Off	Off	Off
ATW	Off	On	Off
Push lock	Off	On	On *
Indoor (3200° K)	On	Off	On
Outdoor (6500° K)	On	On	On

* To manually set Push lock feature: place a white background in front of camera and press “Push lock” switch.

Manually Setting Shutter Speed (Color and TDN Cameras)

To manually set the shutter speed, turn switch #9 to the ON position; then set switch #6, #7, and #8 for the desired shutter speed (see *Figure 10*).

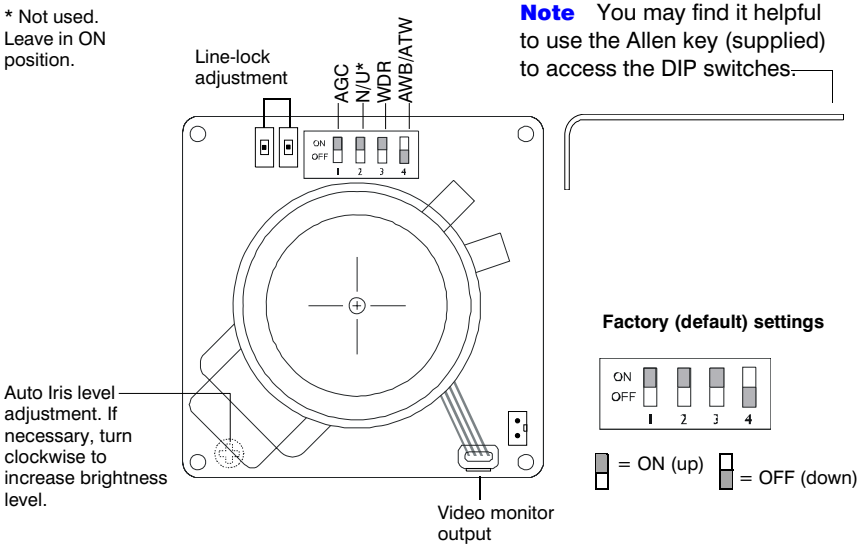
Shutter speed(s)	SW6 IRIS	SW7 BLC	SW8 FLON	SW9 AE
1/50 (PAL) 1/60 (NTSC)	Off	On	Off	On
1/100 (PAL) 1/120 (NTSC)	Off	On	On	On
1/250	Off	Off	Off	On
1/500	Off	Off	On	On
1/1000	On	On	Off	On
1/2000	On	On	On	On
1/4000	On	Off	Off	On
1/10000	On	Off	On	On

Note FLON, BLC, and IRIS can be set when switch #9 is set to the OFF position.

Caution Before you adjust the shutter speed, it is important that you understand how the settings can affect the scene detail.

DIP Switch Functions (WDR Cameras)

Figure 11 WDR Camera Switch Settings



Note The Wide Dynamic Range camera has been designed for the best wide dynamic performance and can only be used with Vari-focal Auto Iris lens.

Adjustment Method (WDR Cameras)

Switch no.	Function	Off	On
1	AGC	Off	On
2	Not used	Off	On*
3	WDR (Wide Dynamic Range)	Off	On
4	AWB/ATW	ATW	AWB

* Leave switch #2 in ON position to ensure the camera functions properly.

Adjust the Line Lock (Vertical Phase) For External Sync Reference

Phase adjustment may be necessary in multiple camera installations to prevent picture roll when switching between cameras. To adjust the vertical phase while switching between two cameras, turn the line lock adjustment pot on one camera until there is no vertical roll. See *Figure 10* for color cameras and *Figure 11* for monochrome cameras. The wide dynamic range (WDR) cameras use line lock adjustment buttons to adjust the vertical phase (see *Figure 11*).

Note If the phase cannot be adjusted to prevent picture roll, reverse the line-lock input polarity.

Adjust the Backlight Compensation

The backlight compensation (BLC) adjusts the electronic shutter speed of the camera based on the light levels in specific areas of the scene. This adjustment provides better image quality for scenes that are unevenly lit.

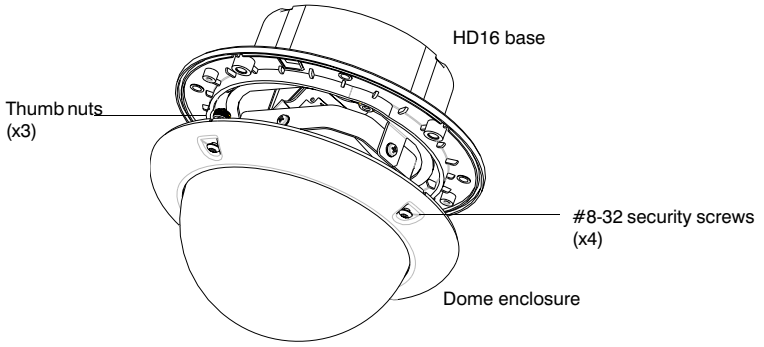
To adjust the BLC, set the BLC switch to ON (see *Figure 10* for color cameras and *Figure 11* for monochrome cameras). Center window weighted.

Secure the Camera and Dome Enclosure

To secure the camera and dome enclosure:

1. Ensure that the gimbal is locked in place (see *Figure 6*).
2. Rotate the dome enclosure until the #8-32 security screws line up with the base, then secure it to the base (see *Figure 12*).

Figure 12 Enclosure Cover Installation



Routine Maintenance

Use regular liquid cleaners to remove most dirt and grime from the HD16 enclosure.

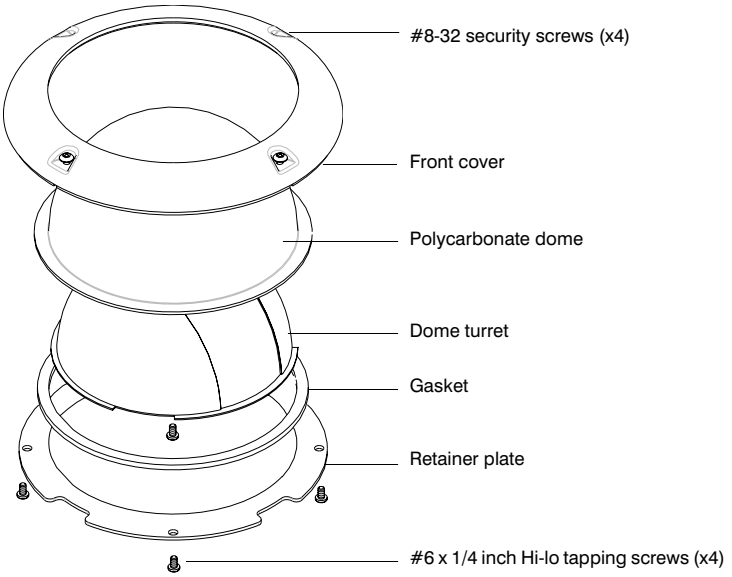
Caution Do not use harsh or abrasive cleaners which can scratch the polycarbonate dome and reduce visibility from the camera.

Dome Replacement

If the polycarbonate dome is damaged or scratched beyond use, contact your distributor or salesperson to order a dome replacement. To replace the HD16 dome:

1. Use the security hex key (supplied) to loosen the #8-32 security screws securing the HD16 lid to the base.
2. Use a Phillips screwdriver to remove the #6 x 1/4 inch Hi-lo tapping screws that attach the dome retainer plate to the front cover.
3. Remove the damaged dome and replace it with the new dome.
4. Use a Phillips screwdriver to attach the dome retainer plate to the HD16 front plate with the screws you removed in *step 2*.
5. Use the security hex key to tighten the security screws that secure the HD16 lid to the base.

Figure 13 Dome replacement



Solving Common Technical Issues

No video

- ❒ Check that the power supply voltage is within the operating specifications for your camera model (see *Specifications)* for details).
- ❒ Connect a video monitor directly to the HD16 video output cable to eliminate video problems that could be caused by other equipment such as video switches.
- ❒ Check the video connections to the monitor or CCTV system.
- ❒ Check for a loose connection at the video camera.

Fuzzy video

- ❒ Check the video ground connections.
- ❒ Check for ground loops.

Call Honeywell Customer Service for additional assistance (see *Service* for contact numbers).

Service

Subject to the terms and conditions listed on the Product Warranty Card, during the warranty period Honeywell will repair or replace, at its sole option, free of charge, any defective products returned prepaid.

In the event you have a problem with any Honeywell product, please call Customer Service for assistance or to request a **Return Merchandise Authorization (RMA)** number.

In the U.S.A. and Canada, call 1.800.796.2288.

Be sure to have the model number, serial number, and the nature of the problem available for the technical service representative.

Prior authorization must be obtained for all returns, exchanges, or credits. **Items shipped to Honeywell without a clearly identified Return Merchandise Authorization (RMA) number may be refused.**

Specifications

Video specifications	High RES	Standard RES
Pickup device:	1/3 in. CCD	
Electronic iris:	1/60 to 1/100,000 second	
Surge protection:	1.5 kW transient	
Video output impedance:	1 Vp-p @ 75 Ohms	
Video signal:		
Color	Standard NTSC	
Resolution:	**High RES**	**Standard RES**
Color, True Day/Night	480 TV lines	350 TV lines
Wide Dynamic, Wide Dynamic True Day/Night	480 TV lines	n/a
Signal to noise ratio (monochrome and color):	Better than 51 dB	
Dynamic range (Wide Dynamic camera only):	Better than 52 dB	
Light sensitivity:		
Color	0.7 lux @ F1.7	0.6 lux @ F1.7
True Day/Night	0.3 lux @ F1.7	0.2 lux @ F1.7
Wide Dynamic	1.0 lux @ F1.7	
Wide Dynamic True Day/Night	0.4 lux @ F1.7	
White Balance:		
Color, True Day/Night	AWB/ATW/Indoor (3200°K), Outdoor (6500°K), Push Lock	
BLC	Center window weighted on/off, switchable	
Lens Type	5 to 50 mm (F1.7) Vari-focal Auto Iris CS Mount	
Angle of View	Tele: 6.9°(D), 5.5°(H), 4.1°(V) Wide: 63°(D), 48°(H), 35°(V)	

Power requirements	
Input voltage:	24 VAC/12 VDC
Input range:	17 to 28 VAC, 11 to 16 VDC
Power consumption:	
Color	3.5 W (max)
True Day/Night	3.5 W (max)
Wide Dynamic, Wide Dynamic True Day/Night	4.5 W (max)

Operating environment	
Temperature:	
Operating	-13°F to 122°F (-25°C to 50°C)
Storage	-31°F to 140°F (-35°C to 50°C)
Humidity:	0 to 95% RH non-condensing

Size and weight	
Dimensions	7.5 in. x 5.3 in. (191 mm x 134.5 mm
Size	2.0 lb (0.9 kg)
Regulatory	
Emissions	FCC, CE (EN55013)
Immunity	CE (EN50130-4)
Safety	EU: 73/23/EEC LVD, UL2044

Note Specifications apply to all camera models, unless noted otherwise.

Cable Guidelines

Power supply cable maximum length (feet/meters)

		Wire gauge			
Total load	**Power supply**	**24 AWG**	**22 AWG**	**18 AWG**	**16 AWG**
Cameras with AC/DC power supplies					
3.5 W	15 VDC	180/55	290/88	730/220	1170/352
3.5 W	24 VAC	470/143	760/232	1926/587	3065/934

Note Calculations are based on an unregulated linear power supply which would be the worst case. Using a regulated or switching power supply can increase the cable distance. We recommend using a **CSA Certified/UL listed Class 2** power adapter to ensure compliance with electrical safety standards.

Video cable maximum length (feet/meters)

Cable type	RG-59	RG-6	RG-11
Wire gauge	23 AWG*	18 AWG*	14 AWG*
Maximum length (feet/meters)	750/229	1500/457	2000/610

* Copper clad steel core, 95% braided shield

We recommend these NVT video transceivers (sold separately by NVT Inc.):

- NV-212A (500 ft/152 m—26 Ω)**
- NV-213A/A-M (1000 ft/305 m—52 Ω)**
- NV-652R, NV-862R or NV-1662R (3000 ft/914 m—163 Ω)**

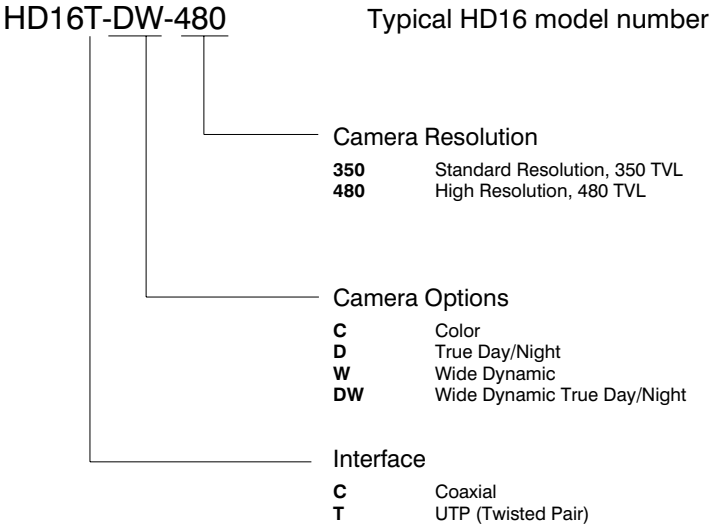
** Distances have been calculated using 24 AWG Twisted Pair wire.

Note We recommend that you measure the wire distance to ensure the capability of the twisted pair product is not exceeded. Use an ohmmeter to measure wire resistance by shorting the two conductors together at the far end, then measure the loop resistance out and back. Compare to the table below.

	Maximum length (feet/meters)				
AWG	**250/76**	**500/152**	**1000/305**	**1500/457**	**2000/610**
18	3 Ω	6 Ω	13 Ω	19 Ω	26 Ω
20	5 Ω	10 Ω	20 Ω	30 Ω	40 Ω
22	8 Ω	17 Ω	33 Ω	48 Ω	66 Ω
24	13 Ω	26 Ω	52 Ω	78 Ω	108 Ω

Note Use point-to-point Unshielded Twisted Pair wire only.

HD16 Model Numbers



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